PATENT CLAIMS

1. A lifting tool for handling of a pipe-string (2) and pipe length (3,4) during joining and lowering or lifting and disassembly of conductor, casing, risers, drill strings or similar in a bore hole (160) or well (160), where the lifting tool comprising

- a lifting part (20) characterised by a coaxial piston rod (47), and a support part (5) for connection to and receiving lifting force from a top drive (60) or derrick crane (60); and
- a hydraulic system (40) which is configured to grip and hold the lifting part (20) against either or both of the inner, outer diameters of the pipe length (3) end;

Characterised by the lifting tool also comprising a lifting nipple (32) with a hollow coaxial lifting nipple axle (36), a lifting nipple cone (37), and a lifting nipple flange for collar (33) which is arranged between the lifting nipple axle (36) and the lifting nipple cone (37) and configured for transfer of load to the lifting tool,

- where the lifting nipple (32) is arranged concentric to the piston rod (47) and configured for movement along the piston rod (47);
- where the lifting nipple (32) is configured to carry all or part of the weight of the pipe length (3,4) or the resulting pipe-string (2);
- where the lifting nipple cone (37) is equipped with external primarily horizontal grooves or external threads (34) and configured for screwing into and out of the end of a pipe length (3,4).

2. A lifting tool according to claim 1, where the lifting part (20) is configured for rotation about the piston rod (47) axis, such that the lifting part (20) with the pipe length (3,4) is configured for a controlled in-screwing (joining) of the pipe length (3,4) into a pipe length (3,4) or a standing pipe-string (2) located below, and where the lifting part (20) subsequent to the pipe length (3,4) joining with the pipe-string (2) is configured to carry the resulting pipe-string (2) total combined weight.

3. A lifting tool according to claim 1, where the lifting part (20) is movable about a horizontal axis and configured for grasping a horizontal or near horizontal positioned pipe length (3,4).

4. A lifting tool according to claim 1, where the lifting part (20) is configured for circulation of drilling fluid, drilling mud, cement or other fluid or fluid mix via a flexible hose (7) on the lifting tool support part (5) and via the piston rod (47) in the lifting tool lifting part (20).

5. A lifting tool according to claim 1, where the lifting part (20) also comprises a coaxial guide tube (38), which is arranged concentric to the piston rod (47).

6. A lifting tool according to claim 5, where the lifting nipple (32) is arranged concentric to the coaxial guide tube (38), and where the lifting nipple (32) is configured for movement along the coaxial guide tube (38) during in-screwing and out-screwing of the pipe length (3,4).

7. A lifting tool according to claims 5 or 6, where the external threads (38a) are arranged on the coaxial guide tube (38) to engage with the internal threads (35) on the lifting nipple.

8. A lifting tool according to claim 1, where the lifting part (20) also comprises a housing (16) with a top plate unit (17) or a top plate (21), and where the housing (16) comprises a main lifting shoulder (18) and a base plate (19).

9. A lifting tool according to claim 8, where the top plate unit (17) comprises

- at least one, preferably two disc shaped plates (17a,b), each with a central opening,
- one or more web sections (17c) configured for stiffening the top plate unit (17) and oriented primarily normal to and between the top plates (17a,b), and where the web sections (17c) are fixed to the top plates (17a,b) preferably by a welded connection;
- a mounting plate (149) arranged on the outside of the upper plate (17a); and
- a self lubricating bushing arranged between the lifting collar (48) on the piston rod (47) and the other top plate (17b).

10. A lifting tool according to claim1, where the lifting part (20) also comprises a nipple rotation system (90) configured for in-screwing and out-screwing of the lifting nipple (32) lifting nipple cone (37) in a threaded part of an end of the pipe length (3,4) which shall be lifted or loosened.

11. A lifting tool according to claim 10, where the nipple rotation system (90) comprises one or more hydraulic motors (91), each equipped with a gear sprocket (93) on a gear axle (94).

12. A lifting tool according to claim 10 or 11, where the top plate unit (17) comprises a cylinder (17d) with a spindle system (17e) for inlet (95) and outlet (96) and case drain (97) passages for hydraulic oil to the nipple rotation system (90), where the cylinder (17d) is arranged concentric to the piston rod (47) and axially centered in the top plates (17a,b).

13. A lifting tool according to claim 7 or 8, where the lifting nipple (32) lifting nipple axle (36) is equipped with external vertical grooves (splines) (36a) and configured for engagement by and rotation of one or more gear sprockets (93) in the nipple rotation system (90).

14. A lifting tool according to claim 1, where the lifting part (20) also comprises

- an adapter (6) which is connected to a high pressure hose (7) with a swivel (7a), for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix from a drive unit or top drive (60),
- a bolted goose neck connection (8), preferably with a swivel, for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix to the piston rod (47) in the lifting part (20), connected to a manifold or adapter (9) for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix from the top drive (60).

15. A lifting tool according to claim 1, where the lifting part (20) is supported free to rotate by an elevator apparatus (70) attached to the piston rod (47), preferably in a recess or lifting shoulder (13) on the piston rod (47).

16. A lifting tool according to claim1, where the lifting part (20) also comprises a tilting arm (10) with one end (10a) arranged concentric to the piston rod (47), and the other end (10b) is attached to a telescopic hydraulic lifting cylinder (61), preferably with the use of a chain connection or other suitable means of attachment.

17. A lifting tool according to claim 1, where the lifting part (20) comprises;

- an entry cone or expanding packing / seal / mud packer (140), preferably an elastomer packing (140), arranged concentric to the piston rod (47), configured for placing in the end of the pipe length (3,4) and to expand against the pipe length or pipe-string (3,4) inner diameter upon activation of the lifting tool, where the entry cone (140) is attached to the piston rod (47) with the use of a bolted connection (143,144); and
- an funnel shaped entry guide (141) with a compliant support ring (146), where the entry guide (141) is configured to receive the end of the pipe length or pipe-string (2,3,4) and rest against and clamp onto the outer diameter of the pipe length or pipe-string (2,3,4).

18. A lifting tool according to claim 1, where the piston rod (47) comprises a hollow fluid passage (147) for application of drilling fluid, drilling mud, cement, or other fluid or

fluid mix and a hollow fluid passage (148) for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix.

19. A lifting tool according to claim 1, where the hydraulic system (40) is a double acting or two way piston cylinder mechanism which comprises a hydraulic cylinder (42) with a piston cylinder base (44), a piston cylinder plate (41) and a hydraulic piston (43) which is arranged concentric to and fix to the axial piston rod (47).

20. A lifting tool according to claim 19, where the hydraulic system (40) also comprises:

- an inlet fluid passage (51) for hydraulic oil to one side of the hydraulic piston (43) in the hydraulic cylinder (42); and
- an outlet fluid passage (52) for hydraulic oil to the other side of the hydraulic piston (43) in the hydraulic cylinder (42);
- where the inlet passage (51) and the outlet passage (52) run through the piston rod (47) from the manifold (9).

21. A lifting tool according to claim 1, where the lifting tool lifting part (20) comprises a clamping system which is configured to grasp and hold the pipe length or pipe-string (2,3,4) which shall be lifted, and where the clamping system includes at least one set of opposing outer (24) and inner (29) clamping segments or clamping rings, preferably with a sealing system or sealing ring (29a) positioned on one side of the clamping ring or clamping segment (29) which contacts the pipe length or pipe-string (2,3,4) outer diameter, and where the pipe length or pipe-string (2,3,4) inner diameter is engaged by the entry cone (140).

22. A lifting tool according to claim 1, where the lifting part (20) also comprises a coaxial bearing cylinder (22) with a top plate (22a) and a guide or stop plate (22b), where the coaxial bearing cylinder (22) is configured to guide the lifting nipple (32) into the correct position during in-screwing of the pipe length (3,4).

23. A lifting tool according to claim 22, where the main lifting shoulder (18) is configured to be positioned adjacent to the guide or stop plate (22b) when the lifting tool is activated, and where the guide or stop plate (22b) is configured to be positioned adjacent to the lifting nipple flange or collar (33) when the lifting nipple (32) is screwed into the threaded section of one end of the pipe length (3,4).

24. A lifting tool according to claim 22, where the nipple rotation system (90) is attached to the coaxial bearing cylinder (22) with the use of one or more mounting brackets (92).

25. A lifting tool according to claims 5-7, where the coaxial bearing cylinder (38) is connected to a spring system (39) for compensating and equalising the tension forces between the lifting nipple cone (37) external horizontal grooves or threads (34) and the internal horizontal grooves or threads (3a) in one end of the pipe length (3,4), and between the lifting nipple (32) internal horizontal grooves or threads (34) and the external horizontal grooves or threads (38a) on the coaxial bearing cylinder (38).

26. A lifting tool according to claim 24, where the spring system (39) comprises two or more helical springs ( ) or helical collar ( ).

27. A lifting tool according to claim 25-26, where the hydraulic cylinder (42) with the piston cylinder base (44) is attached to one side of the bearing cylinder (22) top plate (22a), and where the spring system (39) with the coaxial guide tube (37) is attached to the bearing cylinder (22) top plate (22a) on the opposite side of the hydraulic cylinder (43) and piston cylinder base (44).

28. A lifting tool according to claim 1, where there is arranged one or more independent sensors (15) in the lifting tool lifting part (20), preferably spring loaded pressure sensors, to determine the lifting nipple (32) position with respect to the end of the pipe length (3,4), and where each sensor (15) is connected to a limit switch (14).

29. A lifting tool according to claim 8 or 9, where the housing (16) comprises one or more inspection openings.

30. A lifting tool according to the previous claims, where there are arranged one or more lugs on the lifting nipple (32) lifting nipple flange (33), for manual operation / rotation of the lifting nipple (32) preferably with the use of a lever or crow-bar.

31. A lifting tool according to claim 19, where hydraulic oil is supplied by a preferably radial inlet (50) on the support part (5) and via a predominantly vertical passage (51) for hydraulic oil through the piston rod (47) and with a radial outlet for hydraulic oil from the piston rod (47) under the piston (43) to move the piston (43) upwards.

32. A lifting tool according to claim 31, where hydraulic oil is supplied from the hydraulic cylinder (42) upper part above the piston (43) to drive the inner clamping rings (29) downward such that the outer clamping segments (24) with friction surface (27) retract from and release the inner diameter of the pipe length (3,4).

33. A lifting tool according to claim 1, where the piston rod (47) comprises

- a fluid passage (147) configured for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix, and
- a fluid passage (148) configured for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix.

34. A lifting tool according to claim 1, where the piston rod (47) comprises a lifting collar (48) configured to transfer load from the lifting tool piston rod (47) to the lifting tool lifting part (20).

35. A lifting tool according to claim 16, where the lifting tool lifting part (20) comprises a locking mechanism for the lifting tool,

- where a slotted hub (5a) is arranged concentric to and attached to the piston rod (47), and where the tilting arm (10) is compliant, preferably with a spring loaded joint (10a) in the tilting arm (10),
- where the compliant tilting arm (10, 10a) is configured for movement from an initial position and passively downwards into one of the slots in the slotted hub (5a) to an operating position, for locking of the lifting tool against rotation of the lifting tool lifting part (20).

36. A lifting tool according to claim 35, where the spring loaded joint (10a) is configured for release of the tilting arm (10) upon retraction of the spring loaded joint (10a) from a position where the lifting tool lifting part (20) has rotated from an initial position and back to the initial position.

37. A lifting tool for handling of a pipe-string (2) and pipe length (3,4) during joining and lowering or raising and disassembling of conductor, casing, risers, drilling strings or similar in a bore hole (160) or well (161), where the lifting tool comprises

- a lifting part (20) which comprises an axial piston rod (47), and a support part (5) for attachment to and receiving lifting force from a drive unit / top drive (60) or derrick crane (60); and
- a hydraulic system (40) which is configured to lock the lifting part (20) against the inner diameter of the pipe length (3) end;

characterised by the lifting tool lifting part (20) also comprising

- a clamping system with inner clamping segments or inner clamping rings (29) attached to the piston rod (47),
  - where the inner clamping segments or clamping rings (29) are configured to move in an axial direction inwards under ramped surfaces of the outer clamping segments (24) and thereby press the outer clamping ring-segments radially outward.
  - where the outer clamping segments are equipped with a radially oriented friction surface (27) to engage the inner diameter of the pipe length (2),
  - where the outer clamping ring-segments (24) are pressed directly or indirectly downwards by a top plate (21) with a hydraulic cylinder (42) connected to the top plate (21), and

- where the cylinder (42) hydraulic piston is attached to the piston rod (47) which in turn drives the inner clamping rings (29) upwards in relation to the outer clamping segments (24) and thereby expands the friction surface (27) outwards to grip the inner diameter of the casing (2).

38. A lifting tool according to claim 37, where the lifting part (20) is configured for rotation about the piston rod (47), such that the lifting part (20) with the pipe length (3,4) is configured for a controlled in-screwing of the pipe length (3) into a standing pipe length or pipe-string (2), and where the lifting part (20) after the joining of the pipe length (3) with the pipe-string (2) is configured for carrying all or part of the weight of the resulting pipe-string (2).

39. A lifting tool according to claim 37, where the inner clamping rings (29) are attached to the piston rod (47) via a coaxial bearing cylinder (22), which itself is attached to a coaxial base plate (39), which in turn is attached to the piston rod (47) with a lower intermediate piece (48) and locked by a hex nut (143,144)

40. A lifting tool according to claim 37, where the lifting part (20) outer clamping segments (24) and inner clamping rings (29) are arranged in pairs in several levels between the base plate (30) and top plate (21).

41. A lifting tool according to claim 40, where the lifting part (20) outer clamping segments (24) are separated in the axial direction by spacer rings (26).

42. A lifting tool according to claim 37, where the hydraulic system (40) is a double acting or two way piston cylinder mechanism which comprises a hydraulic cylinder (42) with a piston cylinder base (44), a piston cylinder plate (41) and a hydraulic piston (43) which is arranged concentric to and fix to the axial piston rod (47).

43. A lifting tool according to claim 42, where hydraulic oil is supplied by a preferably radial inlet (50) on the support part (5) and via a predominantly vertical passage (51) for hydraulic oil through the piston rod (47) and with a radial outlet for hydraulic oil from the piston rod (47) under the piston (43) to move the piston (43) upwards.

44. A lifting tool according to claim 43, where hydraulic oil is supplied from the hydraulic cylinder (42) upper part above the piston (43) to drive the outer clamping rings (24) downward such that the inner clamping segments (29) with packing or packing ring (29a) retract from and release the inner diameter of the pipe length (3,4).

45. A lifting tool according to claim 37, where the lifting part (20) is movable about a horizontal axis and configured for grasping a horizontal or near horizontal positioned pipe length (3,4).

46. A lifting tool according to claim 37, where the lifting part (20) is configured for circulation of drilling fluid, drilling mud, cement or other fluid or fluid mix via a flexible hose (7) on the lifting tool support part (5) and via the piston rod (47) in the lifting tool lifting part (20).

47. A lifting tool according to claim 37, where the lifting part (20) also comprises

- an adapter (6) which is connected to a high pressure hose (7) with a swivel (7a), for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix from a drive unit or top drive (60),
- a bolted goose neck connection (8), preferably with a swivel, for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix to the piston rod (47) in the lifting part (20), connected to a manifold or adapter (9) for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix from the top drive (60).

48. A lifting tool according to claim 37, where the lifting part (20) is supported free to rotate by an elevator apparatus (70) attached to the piston rod (47), preferably in a recess or lifting shoulder (13) on the piston rod (47).

49. A lifting tool according to claim 37, where the lifting part (20) also comprises a tilting arm (10) with one end (10a) arranged concentric to the piston rod (47), and the other end (10b) is attached to a telescopic hydraulic lifting cylinder (61), preferably with the use of a chain connection or other suitable means of attachment.

50. A lifting tool according to claim 37, where the lifting part (20) comprises an entry cone or expanding packing / seal / mud packer (140), preferably an elastomer packing (140), arranged concentric to the piston rod (47), configured for placing in the end of the pipe length (3,4) and to expand against the pipe length or pipe-string (3,4) inner diameter upon activation of the lifting tool, where the entry cone (140) is attached to the piston rod (47) with the use of a bolted connection (143,144).

51. A lifting tool according to claim 37, where the piston rod (47) comprises

- a fluid passage (147) configured for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix, and
- a fluid passage (148) configured for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix.

52. A lifting tool according to claim 37, where the lifting tool lifting part (20) also comprises an indicator system configured for one or more independent sensors (15) in the lifting tool lifting part (20), preferably spring loaded pressure sensors, to determine the entry cone (140) position with respect to the end of the pipe length (3,4), and where each sensor (15) is connected to a limit switch (14).

53. A lifting tool according to claim 49, where the lifting tool lifting part (20) comprises a locking mechanism for the lifting tool,

- where a slotted hub (5a) is arranged concentric to and attached to the piston rod (47), and where the tilting arm (10) is compliant, preferably with a spring loaded joint (10a) in the tilting arm (10),
- where the compliant tilting arm (10, 10a) is configured for movement from an initial position and passively downwards into one of the slots in the slotted hub (5a) to an operating position, for locking of the lifting tool against rotation of the lifting tool lifting part (20).

54. A lifting tool according to claim 53, where the spring loaded joint (10a) is configured for release of the tilting arm (10) upon retraction of the spring loaded joint

(10a) from a position where the lifting tool lifting part (20) has rotated from an initial position and back to the initial position.

55. A lifting tool for handling of a pipe-string and pipe length (2,3,4) during joining and lowering or raising and disassembling of conductor in a bore hole, casing, risers, drilling strings or similar where the lifting tool comprises

- a lifting part (20) which comprises an axial piston rod (47), and a support part (5) for attachment to and receiving lifting force from a drive unit / top drive (60) or derrick crane (60); and
- a hydraulic system (40) which is configured to lock the lifting part (20) against the inner diameter of the pipe length (3,4) end;

characterised by the lifting tool lifting part comprising

- a clamping system in the lifting tool lifting part (20) with one or more sets of inner clamping segments (29) and outer clamping segments or clamping rings (24), where the lifting part (20) with the clamping system is configured to grasp around the end of the pipe length (3,4) below the threaded section of the end of the pipe length (3,4) and
- where the clamping system is configured to be self locking such that the pipe length (3,4) own weight will act to increase the gripping / locking force ensuring secure gripping / locking in the event of the loss of hydraulic oil pressure.

56. A lifting tool according to claim 55,

- where the lifting part (20) is movable about a horizontal axis and configured for grasping a horizontal or nearly horizontal laying pipe length (3,4); and

- where the lifting part (20) is configured for rotation about the piston rod (47), such that the lifting part (20) with the pipe length (3,4) is configured for a controlled in-screwing of the pipe length (3) into a standing pipe-string (2) below, and where the lifting part (20) after the joining of the pipe length (3) with the pipe-string (2) is configured to carry all or part of the weight of the resulting pipe-string (2).

57. A lifting tool according to claim 55, where the lifting part (20) is configured for circulation of drilling fluid, drilling mud, cement or other fluid or fluid mix via a flexible hose (7) on the lifting tool support part (5) and via the piston rod (47) in the lifting tool lifting part (20).

58. A lifting tool according to claim 55, where the lifting tool comoomprises

-m(6/Ua lifting part (20) which comprises an axial piston rod (47), and a support part (5) for attachment to and receiving lifting force from a drive unit / top drive (60) or derrick crane (60);

- a hydraulic system (40) which is configured to lock the lifting part (20) against the outer diameter of the pipe length (3,4) end, where the hydraulic system (40) is a piston hydraulic system (40) with a hydraulic piston (43) connected to the piston rod (47) and arranged in a hydraulic cylinder (42);
- a clamping system in the lifting tool lifting part (20) with one or more sets of inner clamping segments (29) and outer clamping segments or clamping rings (24), where the lifting part (20) with the clamping system is configured to grasp around the end of the pipe length (3,4)

- an outer housing (16) with a top plate (21), and where the housing (16) comprises a lifting shoulder (18) and a base plate (19) with a central opening such that a pipe length (2,3,4) can be grasped;
- a coaxial bearing cylinder (22) with a guide or stop plate (22b), a bearing cylinder plate (22d) with a central opening, a center plate (22e) and an inner bearing cylinder (22f);

where the pressure under the piston (43) upon application of hydraulic pressure forces the piston (43) with the piston rod (47) and the outer housing (16) upwards together with the outer housing (16) base plate (19) and the outer clamping rings (24), such that the bearing cylinder (22) and the stop plate (22b) with the inner clamping segments (29) is forced downwards with respect to the outer clamping rings (24) with the reesult that inner lamping segments (29) are forces inwards to engage and grasp the pipe length (3,4) outer diameter.

59. A lifting tool according to claim 55, where the piston rod includes a lifting collar (48) configured to transfer load from the lifting tool piston rod (47) to the lifting tool lifting part (20).

60. A lifting tool according to claim 58, where the outer housing (16) includes a top plate unit (17).

61. A lifting tool according to claim 60, where the top plate unit (17) comprises

- at least one, preferably two disc shaped plates (17a,b), each with a central opening,
- one or more web sections (17c) configured for stiffening the top plate unit (17) and oriented primarily normal to and between the top plates (17a,b), and where the

web sections (17c) are fixed to the top plates (17a,b) preferably by a welded connection;

- a mounting plate (149) arranged on the outside of the upper plate (17a); and
- a self lubricating bushing arranged between the lifting collar (48) on the piston rod (47) and the other top plate (17b).

62. A lifting tool according to claim 55, where the lifting part (20) also comprises

- an adapter (6) which is connected to a high pressure hose (7) with a swivel (7a), for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix from a drive unit or top drive (60),
- a bolted goose neck connection (8), preferably with a swivel, for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix to the piston rod (47) in the lifting part (20), connected to a manifold or adapter (9) for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix from the top drive (60).

63. A lifting tool according to claim 55, where the lifting part (20) is supported free to rotate by an elevator apparatus (70) attached to the piston rod (47), preferably in a recess or lifting shoulder (13) on the piston rod (47).

64. A lifting tool according to claim55, where the lifting part (20) also comprises a tilting arm (10) with one end (10a) arranged concentric to the piston rod (47), and the other end (10b) is attached to a telescopic hydraulic lifting cylinder (61), preferably with the use of a chain connection or other suitable means of attachment.

65. A lifting tool according to claim 55, where the lifting part (20) comprises a funnel shaped entry guide (141) with a compliant support ring (146), where the entry guide (141) is configured to encircle the end of the pipe length or pipe-string (2,3,4) and to contact and clamp against the outer diameter of the pipe length or pipe-string (2,3,4)

66. A lifting tool according to claim 55, where the piston rod (47) comprises a fluid passage (147) configured for application of drilling fluid, drilling mud, cement, or other fluid or fluid mix, and a fluid passage (148) configured for venting of air during application of drilling fluid, drilling mud, cement, or other fluid or fluid mix.

67. A lifting tool according to claim 55, where the hydraulic system (40) is a double acting or two way piston cylinder mechanism which comprises a hydraulic cylinder (42) with a piston cylinder base (44), a piston cylinder plate (41) and a hydraulic piston (43) which is arranged concentric to and fix to the axial piston rod (47).

68. A lifting tool according to claim 67, where hydraulic oil is supplied by a preferably radial inlet (50) on the support part (5) and via a predominantly vertical passage (51) for hydraulic oil through the piston rod (47) and with a radial outlet for hydraulic oil from the piston rod (47) under the piston (43) to move the piston (43) upwards.

69. A lifting tool according to claim 67, where the hydraulic system (40) also comprises:

- an inlet fluid passage (51) for hydraulic oil to one side of the hydraulic piston (43) in the hydraulic cylinder (42); and
- an outlet fluid passage (52) for hydraulic oil to the other side of the hydraulic piston (43) in the hydraulic cylinder (42);
- where the inlet passage (51) and the outlet passage (52) run through the piston rod (47) from the manifold (9).

70. A lifting tool according to claim 67, where hydraulic oil is supplied from the hydraulic cylinder (42) upper part above the piston (43) to drive the outer clamping rings (24) downward such that the inner clamping segments (29) with packing or packing ring (29a) retract from and release the inner diameter of the pipe length (3,4).

71. A lifting tool according to claim 55, where the lifting tool lifting part (20) also comprises an indicator system configured for one or more independent sensors (15) in the lifting tool lifting part (20), preferably spring loaded pressure sensors, to determine the lifting part (20) position with respect to the end of the pipe length (3,4), and where each sensor (15) is connected to a limit switch (14).

72. A lifting tool according to claim 64, where the lifting tool lifting part (20) comprises a locking mechanism for the lifting tool,

- where a slotted hub (5a) is arranged concentric to and attached to the piston rod (47), and where the tilting arm (10) is compliant, preferably with a spring loaded joint (10a) in the tilting arm (10),
- where the compliant tilting arm (10, 10a) is configured for movement from an initial position and passively downwards into one of the slots in the slotted hub (5a) to an operating position, for locking of the lifting tool against rotation of the lifting tool lifting part (20).

73. A lifting tool according to claim 55, where the spring loaded joint (10a) is configured for release of the tilting arm (10) upon retraction of the spring loaded joint (10a) from a position where the lifting tool lifting part (20) has rotated from an initial position and back to the initial position.

74. A lifting system for lifting or lowering pipe length (3,4) and a pipe-string (2), during joining and lowering or lifting and disassembly of conductor, casing, risers, drill strings, or similar in a bore hole (160) or well (160), where the lifting system comprises

- a lifting tool with lifting part (20) and a support part (5) connected to an elevator apparatus (70) which is connected to a top drive (60) and where the lifting tool lifting part (20) shall work together with a power slip (150) which is configured to receive and support a standing pipe length or pipe-string (2);

characterised by

- the lifting tool lifting part (20) is configured for removable installation in an elevator apparatus (70);

- the elevator apparatus (70) is configured to control the orientation of the lifting tool lifting part (20) such that the lifting tool can engage and grip the end of a pipe length (3,4) and be activated;
- the elevator apparatus (70) and lifting tool upon application of lifting force and activation of the lifting tool lifting part (20) are configured to lift the lifting tool lifting part (20) with the pipe length (3,4) for joining with or connecting to the standing pipe length or pipe-string (2) below; and
- the lifting tool and lifting tool support part (5) is configured for application or circulation of drilling fluids, drilling mud, cement or other fluid or fluid mix to the bore hole or well (160).

75. A lifting system according to claim 74, the lifting tool lifting part (20) is configured for removable installation in an elevator apparatus (70), preferably it an upper part or lifting shoulder (13) on the piston rod (47).

76. A lifting system according to claim 74, where the lifting tool lifting part (20) is configured for rotation about a horizontal or predominantly horizontal axis in the elevator apparatus (70), to grasp an end of a horizontal or nearly horizontal laying pipe length (3,4,), and to be engaged against the inner or outer diameter of an end of the pipe length (3,4)

77. A lifting system according to claim 74, where the lifting system also comprises a rotation apparatus (power tongs) (80) which is configured for rotation of the lifting tool lifting part (20) with the pipe length (3,4) about the piston rod (47), to achieve a controlled in-screwing of the pipe length (3,4) in the standing pipe length or pipe-string (2) below,

and where the lifting tool lifting part (20) after the joining of the pipe length (3) with the pipe-string (2) is configured to carry all or part of the weight of the resulting pipe-string (2).

78. A lifting system according to claim 74, where the lifting tool is configured to receive lifting force from the top drive (60) to activate the lifting tool ; such that the lifting tool after activation of the lifting tool lifting part (20) against the pipe length (3,4) inner or outer diameter, is put in position to lift the pipe length (3,4) or pipe-string (2,3,4), and move to a rotary table (161) for joining of the pipe length (3,4) with the standing pipe-string (2) below.

79. A lifting system according to claim 76-78, with a tube feeding machine for feeding of pipe length (3,4) to the lifting tool lifting part (20).

80. A lifting system according to claim 79, where the lifting system comprises a manipulator arm (170) for moving the far end of the pipe length (3,4) from the tube feeding machine (180) to a vertical position over the standing pipe length or pipe-string (2).

81. A lifting system according to claim 75, where the rotation apparatus (80) comprises a clamping system, or a set of power tongs (81) which are configured to hold the pipe length or pipe-string (2) in a fixed position, and a torque apparatus or second set of power tongs (82) configured for rotation of the lifting part (20) and pipe length (3,4) for joining with the pipe length or pipe-string (2) with the use of a torque or rotation motor.

82. A method for lifting of pipe length for joining of pipe length (3,4) to a pipe-string (2), as well as conductor, casing, risers or similar for application in a bore hole or well (160) with the use of a lifting system and a lifting tool, where the method consists of the following steps:

- the pipe length (3,4) is brought to the start position in proximity to the lifting tool lifting part (20);
- the lifting tool lifting part (20) grasps the end of the pipe length (3,4) which is or will be the upper end of the pipe length (3,4);
- the lifting part (20) is activated for engagement with at least one of the pipe length (3,4) inner or outer diameters with the help of a hydraulic system (40);
- a top drive or derrick crane (60) lifts the lifting tool with the pipe length (3,4) to the vertical or near vertical position over a standing pipe length or pipe-string (2);
- the opposite end of the pipe length (3,4) is joined with the standing pipe length or pipe-string (2) below resulting in an extended pipe-string (2);
- the resulting pipe-string (2) is lowered and held in place by a power slip (150) which is configured to hold the pipe length or pipe-string (2) it the drill floor;
- the resulting pipe-string (2) is released from the power slip (150) such that it is suspended from the top drive (60) and the lifting tool;
- the resulting pipe-string is lowered and again held in place by the power slip (150); and
- the lifting tool is uncoupled from the end of the resulting pipe-string (2).

83. A method according to claim 82, where the method also comprises the following steps:

- the lifting tool support part (5) is placed or held in an elevator apparatus (70), preferably in an upper part or lifting shoulder (13) on the piston rod (47), prior to the pipe length (3) being brought to the lifting tool.

84. A method according to claim 82, where the method also comprises the following steps:

- the lifting tool lifting part (20) is rotated about a predominantly horizontal axis in an elevator apparatus (70), with the use of a tilting arm (10) which in one end is fastened to the lifting tool support part (5) and in the other end connected to a lifting cylinder (61) mounted on the top drive (60), from a predominantly vertical initial position to an engagement position with a horizontal or predominantly horizontal laying pipe length (3);
- the pipe length (3) is moved forward to the lifting tool lifting part with the help of a tube feeding machine and into the lifting tool lifting part (20) prior to activating the lifting tool lifting part (20).

85. A method according to claim 84, where the method also comprises the following steps:

- as the pipe length (3) is moved forward on the tube feeding machine, the opposite end of the pipe length (3) is moved into position over the standing pipe-string (2) by a manipulator arm (170); and
- the lifting tool and the pipe length (3) is lowered to the standing pipe-string (2) below for joining with the pipe-string (2).

86. A method according to claim 82, where the method also comprises the following step:

- joining of the pipe length (3) and the pipe-string (2) is achieved by in-screwing of the opposite lower end of the pipe length (3) in a threaded section of the upper end of the standing pipe-string (2) through rotation of the lifting tool lifting part (20) with the pipe length (3) about the lifting tool primary axis with the help of a rotation system (80).

87. A method according to claim 82, where the method also comprises the following step:

- upon activation of the lifting tool a clamping system (24,29) in the lifting tool lifting part is engaged against one or both of the inner and outer diameters of the pipe length (3,4) with the help of a piston hydraulic system (40).

88. A method according to claim 87, where the method also comprises the following step:

- upon activation of the lifting tool an entry cone (140) or expanding packing (140) is pressed against the pipe length (3,4) inner diameter.

89. A method according to claim 84, where the method also comprises the following step:

- in-screwing of a lifting nipple (32) into a threaded section of the upper or following upper end of the pipe length (3,4), preferably with the use of a nipple rotation system (90).

90. A method according to claim 87, where the method also comprises the following step:

- upon release of the lifting tool from the pipe-string (2), the clamping system (24,29) in the lifting tool lifting part (20) is disengaged from the pipe-string (2) end with the use of a hydraulic system (40), such that the lifting tool can move to the finish or standby position.

91. A method according to claim 90, where the method also comprises the following step:

- upon release of the lifting tool from the pipe-string (2), the lifting nipple (32) is unscrewed from the threaded end of the pipe-string (2), preferably with the use of a nipple rotation system (90), or manually with the use of a manual release system for the lifting nipple, and thereafter the clamping system (24,29) is released from the pipe-string (2) end.

92. A method according to claim 82, where the method also comprises the following step:

- progress of entering the pipe length (3) into the lifting part (20) is monitored by a sensor system, preferably with one or more independent sensors (14,15) each connected to a limit switch, which serves to stop the movement of the pipe length at the proper moment to avoid damage to the end of the pipe length, and to indicate proper centering of the lifting tool lifting part (20) with respect to the end of the pipe length (3,4) to be engaged by the lifting tool.